ARIS SUMMARY SHEET

District Geologist, Victoria   Off Confidential: 89.03.18

ASSESSMENT REPORT 17231   MINING DIVISION: Victoria

PROPERTY: Gold Tusk
LOCATION: LAT 48 50 41   LONG 123 55 30
UTM 10 5410388 432131
NTS 092B13W
CLAIM(S): Gold Tusk
OPERATOR(S): Int. Cherokee Dev.
AUTHOR(S): Allen, G.J.
REPORT YEAR: 1988, 38 Pages
GEOLOGICAL
SUMMARY: The majority of the claim is underlain by a northwest striking, moderately northeast dipping sequence of shale, siltstone, sandstone and conglomerate of the Upper Cretaceous Nanaimo Group.
WORK
DONE: Geological,Geochemical
GEOL 400.0 ha
Map(s) - 1; Scale(s) - 1:10 000
ROCK 9 sample(s) ;ME
SILT 5 sample(s) ;ME

MPH

ASSESSMENT REPORT ON
GEOLOGICAL MAPPING, ROCK AND SILT SAMPLING
of the

GOLD TUSK PROPERTY
(Gold Tusk Claim)

VICTORIA MINING DIVISION, B.C.
NTS 92B/13W 48°51'N Lat., 123°55'W Long.
for
INTERNATIONAL CHEROKEE DEVELOPMENTS LTD.

January 31, 1988

Gordon J. Allen, P.Geol.

SUMMARY

A reconnaissance program of geological mapping, and rock and stream sediment sampling was conducted on the Gold Tusk property in 1987 by MPH Consulting Limited on behalf of International Cherokee Developments Ltd. The program was designed to assess the mineral potential of the property and to determine where future exploration activities should be focused.

The majority of the Gold Tusk property is underlain by a northwest striking, moderately northeast dipping sequence of shale, siltstone, sandstone and conglomerate of the Upper Cretaceous Nanaimo Group. The position of this sequence in the stratigraphy is uncertain but units have tentatively been assigned to the Haslam, Extension-Protection, and Cedar District Formations.

A small part of the southwest corner of the property may be underlain by rocks of the Upper Paleozoic Sicker Group; specifically cherty sedimentary rocks of the Cameron River Formation (cf. 'Sediment-Sill Unit'). On the adjacent MNS property these sedimentary rocks have been intruded by quartz diorite of the Jurassic Island Intrusions. Both of these rock types appear to trend onto the property, but no exposures were found.

Of the several rock and stream sediment samples collected on the property, only one stream sediment sample contained anomalous metal concentrations (S-1; 40 ppb Au). Outcrop was not found in the area, but it is apparently underlain by shale of the Haslam Formation.

Economic potential for the property appears to be limited to the possible occurrence of rhodonite in the cherty sediments of the Cameron River Formation (cf. 'Sediment-Sill Unit') and to deposits of expandable shale (used for the manufacturing of

lightweight aggregate) in the Cedar District Formation. Shalex Resources Limited of Victoria has discovered expandable shale in the area and the deposit appears to be striking onto the Gold Tusk property.

On the basis of the results of this program it is recommended that a Phase I exploration program be conducted on the property to prospect for occurrences of rhodonite, to test for deposits of expandable shale, and to research the viability of manufacturing and marketing lightweight aggregate. This Phase I exploration program is estimated to cost approximately $15,000.

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INTERNATIONAL CHEROKEE DEVELOPMENTS LTD.

GENERAL LOCATION MAP
GOLD TUSK PROPERTY
VICTORIA MINING DIVISION

Project No:	V 99 - ICD - G.T.	By:	T. N.
Scale:	1 : 8 000 000	Drawn:	J. S.
Drawing No:	1	Date:	JANUARY 1988.

MPH Consulting Limited

1.0 INTRODUCTION

This report on the reconnaissance exploration program on the Gold Tusk property (Gold Tusk claim) has been prepared by MPH Consulting Limited at the request of International Cherokee Developments Ltd.

Research and fieldwork for the program was conducted between December 12 and December 20, 1987. Fieldwork consisted of geological mapping, and rock and stream sediment sampling.

All work was performed by or under the supervision of MPH Consulting Limited staff.

2.0 PROPERTY LOCATION, ACCESS, TITLE

The Gold Tusk property is located in the Chemainus River Valley, approximately 17 km west-northwest of the city of Duncan, on Vancouver Island, British Columbia (Figure 1). The property is in the Victoria Mining Division, on NTS sheet 92B/13W and is centred at approximately 48°51'N latitude and 123°55'W longitude (Figure 2).

Access to the north part of the Gold Tusk property is via MacMillan Bloedel's all weather Copper Canyon Main road, approximately 19.5 km southwest of Highway 1 near the town of Chemainus. The south part of the property is accessible via the Hill 60 Forest Service Road which leaves Highway 18 (Cowichan Valley Highway) approximately 13 km west of Highway 1.

The Gold Tusk property consists of one mineral claim, details of which are given below:

Claim	Record No.	Units	Anniversary Date	Year Registered
Gold Tusk	1705	16	June 24, 1988	1986

The claim is owned by International Cherokee Developments Ltd.

3.0 HISTORY AND ECONOMIC SETTING

Government geological work conducted in this area is documented in BCDM and GSC publications by J.T. Fyles (1955) and J.E. Muller (1977, 1980a, 1980b, 1982). The property was included in an area mapped by N.W. Massey (BCMEMPR) in 1987.

This area of Vancouver Island has several rhodonite, massive sulphide (base metal) and gold occurrences.

The Striker 1 rhodonite deposit, located approximately 3 km west-southwest of the Gold Tusk claim and adjacent to the old Hill 60 manganese mine, was mined until recently for carving stone.

The Twin J mine on Mount Sicker, approximately 9 km east-northeast of the Gold Tusk property, was in discontinuous production between 1898 and 1964. The total recorded production was 276,831 tonnes of ore containing 1,244,555 g Au; 26,141,200 g Ag; 9,681,576 kg Cu; 20,803,748 kg Zn; 189,925 kg Pb; and 1179 kg Cd.

Approximately 3.5 km north of the Gold Tusk property is the recently discovered Lara deposit. It is a polymetallic volcanogenic massive sulphide deposit with a strike length of over 1500 m. Average grades are 3.26 g/t Au, 89.5 g/t Ag, 0.62% Cu, 0.81% Pb and 3.59% Zn over an average thickness of 3.9 m. Reserves are estimated at 837,000 tonnes.

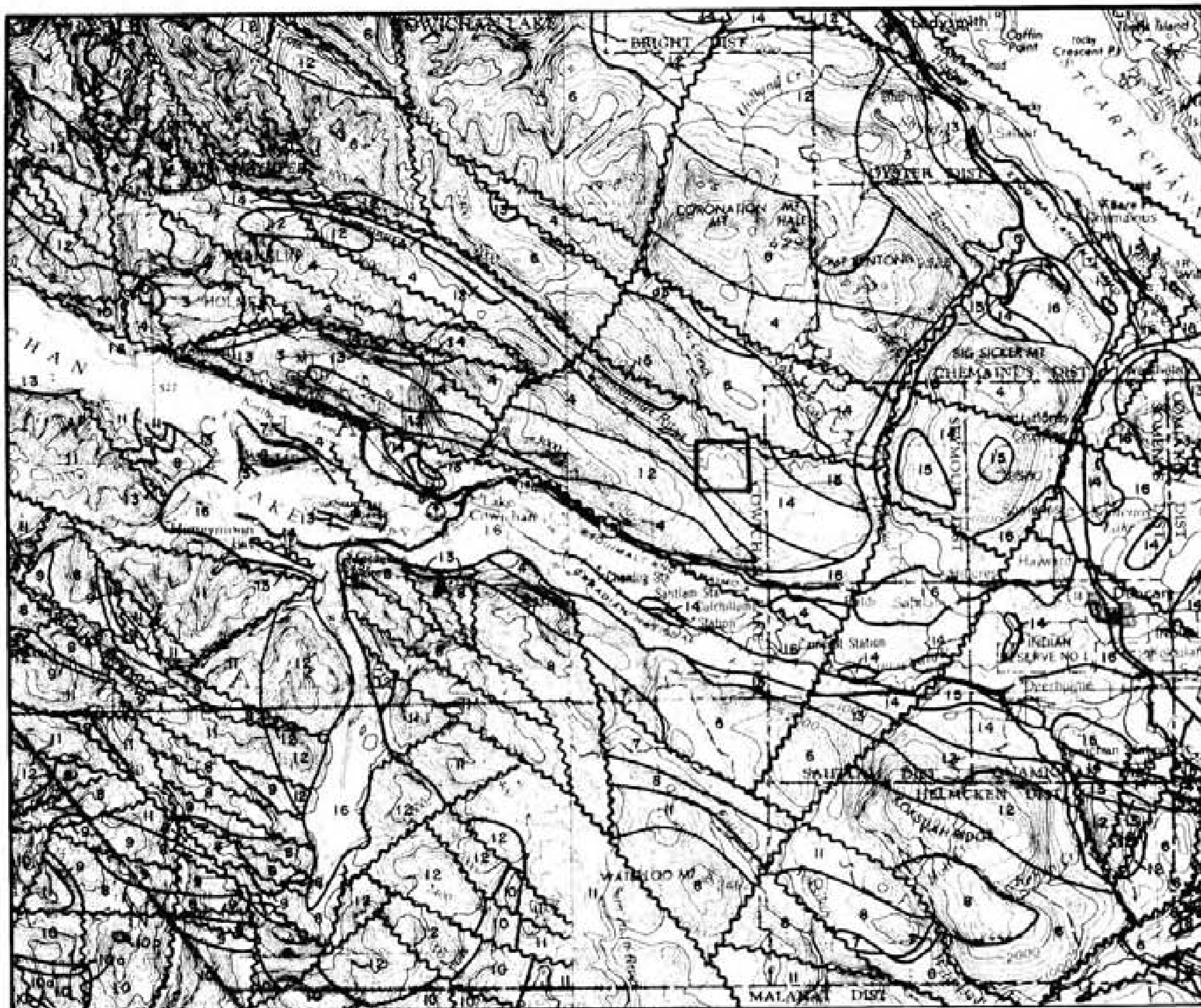
More details of the economic setting and mineral occurrences in the area are given in MPH Consulting Limited's 'Compilation of Mineral Occurrences of the Sicker Group' by Neale (1984, 1988).

4.0 REGIONAL GEOLOGY

The Gold Tusk property is located in the southeastern part of a belt of Paleozoic Sicker Group rocks known as the Horne Lake - Cowichan Uplift or geanticline. This belt contains volcanic and sedimentary rocks ranging in age from late Silurian to Early Mississippian. Sicker Group rocks have been intruded by Late Triassic gabbro and Early Jurassic granodiorite to quartz diorite. Flanking Sicker Group rocks to the northeast and southwest are basaltic volcanic rocks and limestone of the Late Triassic Vancouver Group. Early Jurassic rhyolitic to basaltic volcanic rocks of the Bonanza Group also occur to the southwest of the belt of Sicker Group rocks. Collectively these rocks make up part of Wrangellia Terrane on Vancouver Island.

4.1 Sicker Group

Muller (1980) subdivided the Sicker Group as follows from oldest to youngest: Nitinat Formation, Myra Formation, Sediment-Sill Unit and Buttle Lake Formation. Figure 3 shows the regional geology of the Cowichan Valley area using this terminology. A recent mapping program conducted in the Port Alberni area (Sutherland Brown et al, 1986); Sutherland Brown and Yorath, 1985) has resulted in the proposed redivision and renaming of Sicker Group rocks. Massey (1987), who conducted regional mapping programs in the Cowichan and Chemainus River Valleys in 1986 and 1987, has used much of the terminology introduced by Sutherland Brown.



QUATERNARY

16	Glacial and alluvial deposits

UPPER CRETACEOUS

Nanaimo Group

15	Extension - Protection Fm: sandstone, conglomerate, minor siltstone, shale, coal
14	Haslam Fm: shale, siltstone, minor sandstone
13	Comox Fm: sandstone, conglomerate, minor siltstone, shale, coal

JURASSIC

Lower to Middle Jurassic

12	Island Intrusions: granodiorite, quartz diorite

Lower Jurassic

11	Bonanza Group: basaltic to rhyolitic tuff, breccia, flows, sills, and dykes; minor argillite, greywacke

UPPER PALEOZOIC AND ? OR TRIASSIC AND JURASSIC

10	Westcoast Complex: quartz diorite, diorite, tonalite, amphibolite, agmatite, minor metavolcanic and metasedimentary rocks 10 [illegible], skarn.

TRIASSIC

Middle ? and Upper Triassic

Vancouver Group

9	Quatsino Fm: limestone
8	Karmutsen Fm: pillow basalt, breccia, tuff, minor flows.

PALEOZOIC

Sicker Group

PENNSYLVANIAN AND PERMIAN

7	Buttle Lake Fm: limestone, chert, greywacke, argillite

PENNSYLVANIAN AND MISSISSIPPIAN

6	Sediment - Sill Unit: argillite, greywacke, chert, diabase sills

LOWER DEVONIAN AND OLDER

5	Saltspring Intrusions: meta-granodiorite, meta-quartz porphyry, quartz-sericite schist
4	Myra Fm: well bedded felsic tuff and breccia, argillite, rhyodacite in flows and sills, minor basic tuff, quartz-sericite schist, phyllite, massive sulphides
3	Nitinat Fm: pillow lava and breccia of augite (uralite) porphyry, basic tuff; minor chlorite - actinolite schist

LOWER PALEOZOIC (OR YOUNGER ?)

2	Colquitz gneiss: quartz - feldspar gneiss
1	Wark gneiss: massive and gneissic metadiorite, metagabbro, amphibolite

0 5 10km

N

After Muller (1980, 1982) NTS 92 B

INTERNATIONAL CHEROKEE DEVELOPMENTS LTD.

REGIONAL GEOLOGY MAP

GOLD TUSK CLAIM

VICTORIA MINING DIVISION

Project No.	V 99 - ICD - G.T.	By	T. N.
Scale	1 / 250 000	Drawn	J. S.
Drawing No.	3	Date	JANUARY 1988.

MPH Consulting Limited

The table below correlates the units used by Massey with those of Muller.

SICKER GROUP

Upper Silurian to Lower Permian

(after Massey, 1987)	(after Muller, 1980a)
Buttle Lake Subgroup	
Mount Mark Formation	Buttle Lake Formation
Cameron River Formation	Sediment-Sill Unit
Youbou Subgroup	
McLaughlin Ridge Formation	Myra Formation
Nitinat Formation	Nitinat Formation

The **Nitinat Formation** (Figure 3, Unit 3) consists predominantly of mafic volcanic rocks, most commonly flow-breccias, or agglomerates including some massive flows, and rare pillow basalts. Locally, medium-grained, generally massive basaltic tuff is interbedded with the flows. The flow-breccia is composed of fragments of basalt up to 30 cm in length containing phenocrysts of uralitized pyroxene as well as amygdules, both from 1 mm to more than 1 cm in size, in a matrix of finer grained, similar basalt(?). Thin sections show pale green amphibole (uralite) is replacing clinopyroxene. Uralitized gabbroic to dioritic rocks underlie and intrude the volcanics and are believed to represent feeder dykes, sills, and magma chambers to the volcanics. The Nitinat Formation may be distinguished from the similar Karmutsen Formation by the abundance of uralite phenocrysts, a usual lack of pillow basalts, lack of dallasite alteration between pillows (characteristic of the Karmutsen Formation) locally pervasive foliation, and lower greenschist or higher metamorphosed grade. Muller (1980a) estimated the thickness of the Nitinat Formation to be about 2000 m. Work by Fyles (1955) indicates a thickness of at least 1500 m for the Nitinat Formation.

The **Myra (cf. McLaughlin Ridge) Formation** (Figure 3, Unit 4) overlies the Nitinat Formation, possibly with minor unconformity. In the Nitinat-Cameron River area the Myra Formation is made up of a lower massive to widely banded basaltic tuff and breccia unit, a middle thinly banded albite-trachyte tuff and argillite unit, and an upper thick bedded, medium-grained albite-trachyte tuff and breccia unit. In the lower unit, crudely layered mottled maroon and green volcaniclastic greywacke, grit, and breccia are succeeded by beds of massive, medium-grained dark tuff up to 20 m thick interlayered with thin bands of alternating light and dark, fine-grained tuff with local fine to coarse breccias containing fragments of Nitinat Formation volcanics. The middle unit comprises a sequence of thinly interbedded, light feldspathic tuff (albite-trachyte or keratophyre composition) and dark marine argillite which has the appearance of a graded greywacke-argillite turbidite sequence. In the upper part of the middle unit, sections of thickly bedded to massive black argillite occur. The upper unit contains fine and coarse crystal tuffs in layers up to 10 m thick with local rip-up clasts and slabs of argillite up to 1 m in length as well as synsedimentary breccias of light coloured volcanic and chert fragments in a matrix of black argillite.

Mapping by Fyles (1955) in the area north of Cowichan Lake located a thick sequence of mainly massive green volcanics (Nitinat Formation), overlain by a "marker" unit consisting of a sequence of thin-bedded, cherty tuffs with several metres of coarse breccia containing fragments of amygdaloidal volcanics between it and the Nitinat Formation. Overlying the marker unit are grey to black feldspathic tuffs and argillaceous sediments and minor breccias. Muller (1980a) considers the marker unit to correspond to the lower unit of the Myra Formation, while the overlying unit of tuffs and sediments is correlated with the middle unit "and probably contains the upper ... unit as well."

In the Mount Sicker area, the Myra Formation is more pervasively deformed and consists of well-bedded, mainly felsic tuff and breccia interbedded with black argillite and some greywacke. The rocks have been converted to quartz-chlorite-sericite schist in steep and overturned isoclinal folds. Breccia fragments are commonly epidotized. The "Tyee Quartz Porphyry" is a porphyritic rhyolite, containing quartz eyes to 5 mm, that occurs partly as crosscutting sills and partly as flows(?) within the Myra Formation. Tyee Quartz Porphyry is related to the Saltspring Intrusions. These intrusions have been dated at 365($\pm$) Ma (Brandon et al, 1986) indicating that both the Nitinat and Myra formations are Late Devonian or older.

In the Buttle Lake area, 160 km northwest of Duncan, Myra Formation comprises volcaniclastic rocks consisting dominantly of rhyodacitic or rhyolitic tuff, lapilli tuff, breccia, and some quartz porphyry and minor mafic flows and argillite (Upper Myra Formation). These are host to Westmin Resources Ltd.'s Myra, Lynx, Price, and H-W massive sulphide (Cu-Zn-Pb-Au-Ag-Cd) deposits.

Muller (1980a) estimated the thickness of the Myra Formation at 750 to 1000 m. Fyles' (1955) work indicates that the thickness of this formation in the Cowichan Lake area is at least 1000 m.

Unconformably overlying the McLaughlin Ridge Formation are epiclastic sedimentary rocks of the **Cameron River Formation** (formerly mapped as the Sediment-Sill Unit (Figure 3, Unit 6)). The base of this formation is composed of a sequence of chert and cherty tuff up to 200 m thick (Massey, 1987). This chert sequence grades upward into interbedded argillite, siltstone and sandstone.

The **Buttle Lake (cf. Mount Mark) Formation** (Figure 3, Unit 7) consists of a basal green and maroon tuff and/or breccia overlain by coarse-grained crinoidal and calcarenitic limestone, fine-grained limestone with chert nodules and some dolomitic limestone. Lesser amounts of argillite, siltstone, greywacke, or chert are present.

In the area southeast of Cowichan Lake, the Buttle Lake Formation consists of laminated, calcareous grey siltstone and black argillite containing lenses of coarse-grained calcarenite, minor massive beds of crinoidal limestone about 1 m thick, and lenses and nodules of chert. The section was described by an earlier worker as mainly interbedded chert and limestone (Yole in Muller, 1980a).

The Buttle Lake Formation is up to 466 m thick (approximately 300 m thick southeast of Cowichan Lake). The age of the formation, based on fossil evidence, appears to be Middle Pennsylvanian, but may be as young as Early Permian (Muller, 1980a). This has been confirmed by recent dating work by Brandon and others (1986), including isotopic as well as conodont ages, which indicate that rocks of the Buttle Lake Formation are early Middle Pennsylvanian through Early Permian in age.

4.2 Vancouver Group

The **Karmutsen Formation** (Figure 3, Unit 8) volcanic rocks unconformably to paraconformably overlie the Buttle Lake Formation limestone to form the base of the Vancouver Group. They are the thickest and most widespread rocks on Vancouver Island. The formation consists mainly of dark grey to black, or dark green ferrotholeiitic pillow basalt, massive basalt, and pillow breccia. Flows are commonly aphanitic feldspar porphyritic, and amygdaloidal. Pillow lavas generally occur toward the base of the section.

Conglomerate containing clasts of Sicker Group rocks and jasperoid tuff form basal sections in the Nitinat-Horne Lake area to the northwest.

Karmutsen Formation rocks are generally relatively undeformed compared to Sicker Group rocks. They are dated Upper Triassic and older.

Massive to thick-bedded limestone of the **Quatsino Formation** (Figure 3, Unit 9) is widespread in the area south of Cowichan Lake. The limestone is black to dark grey and fine-grained to microcrystalline. Coarse-grained marble occurs in the vicinity of intrusive rocks. The majority of known economic skarn deposits on Vancouver Island are hosted by Quatsino limestone. Thin-bedded limestone also occurs within the formation. Fossils indicate an age of Upper Triassic (Muller and Carson, 1969).

The **Parsons Bay Formation** overlies Quatsino limestone, or locally, Karmutsen volcanics. It is composed of interbedded calcareous black argillite, calcareous greywacke and sandy to shaly limestone. It is included within the Quatsino Formation within the report map area. The Quatsino and Parsons Bay Formations are considered to represent near and offshore basin facies, respectively, in te quiescent Karmutsen rift archipelago (Muller, 1981).

4.3 Westcoast Complex

The **Westcoast Complex** (Figure 3, Unit 10) comprises a variety of plutonic and metamorphic mafic crystalline rocks, including amphibolite, diorite, and quartz diorite with homogeneous, agmatitic or gneissic textures. Dioritic or agmatitic bodies underlying or intruding the Nitinat Formation are included. Metamorphosed Karmutsen Formation and/or Sicker Group rocks grade locally into the complex and are believed to be its protolith, having been migmatized in Early Jurassic time. The mobilized granitoid portion of the complex is believed to be the source of the Island Intrusions and, indirectly, the Bonanza Group volcanics (Muller, 1981, 1982; Isachsen, 1986). Small bodies of recrystallized limestone found within the complex are believed to be derived mainly from the Quatsino Formation, and to a lesser extent from the Buttle Lake Formation.

4.4 Bonanza Group

Bonanza Group (Figure 3, Unit 11) stratigraphy varies considerably in a horizontal and lateral sense as it represents parts of several different eruptive centres of a volcanic arc. Basaltic, rhyolitic, and lesser andesitic and dacitic lava, tuff, and breccia, and intercalated beds and sequences of marine argillite and greywacke make up the Bonanza Group. In the area south of Cowichan Lake, the volcanics are described as dark brown, maroon, and yellow-grey massive tuff, volcanic breccia, and massive or plagiophyric flows (Muller, 1982). Bonanza Group volcanics are considered to be Early Jurassic extrusive equivalents of the Island Intrusions.

4.5 Nanaimo Group

Upper Cretaceous Nanaimo Group sedimentary rocks occur throughout the area, unconformably overlying Paleozoic Sicker Group rocks. Extensive exposures occur in the Chemainus and Cowichan River valleys. The formations present comprise the basal portions of the Nanaimo Group.

The **Comox Formation** (Figure 3, Unit 13) consists mainly of quartzofeldspathic, cross-bedded beach facies sandstone and lesser conglomerate. Numerous intercalations of carbonaceous and fossiliferous shale and coal are characteristic.

The **Haslam Formation** (Figure 3, Unit 14) is a nearshore littoral depositional facies unit characterized by massive bedded fossiliferous sandy shale, siltstone and shaly sandstone.

Interbedded coarse clastic conglomerate, pebbly sandstone and arkosic sandstone of the **Extension-Protection Formation** (Figure 3, Unit 15) are beach and deltaic sands. Minor shale and coal are reported.

Stratigraphically above the Extension-Protection Formation is a sequence of shale, siltstone and minor sandstone of the **Cedar District Formation**.

4.6 Intrusive Rocks

Fine to coarse-grained diabase and gabbro sills and dykes intrude Sicker Group rocks. These cut the sediments of the Upper Sicker Group rocks and have been included in the informal subdivision 'Sediment-Sill Unit' (Muller, 1980). The intrusive rocks are composed predominantly of hornblende and feldspar. Texturally they range from equigranular to porphyritic and commonly glomeroporphyritic feldspar rosettes up to a few centimeters in diameter. These mafic intrusive rocks are thought to be coeval with the Late Triassic Karmutsen Formation volcanics (Massey, 1987).

Quartz diorite to biotite-hornblende granodiorite stocks of the Jurassic **Island Intrusions** occur throughout the area. They are coeval with Bonanza Group volcanics (Massey, 1987). Intrusive contacts with Sicker and Vancouver Group rocks are sharp and well defined whereas intrusive contacts with Bonanza Group volcanic rocks are typically transitional zones of migmatite and gneiss. Skarn zones occur at the contact of Island Intrusion rocks with Quatsino Formation limestone and less commonly with Buttle Lake Formation limestone.

4.7 Structure

The Buttle Lake Arch, Horne Lake - Cowichan Uplift and Nanoose Uplift are north-northwesterly trending axial uplifts and are believed to be among the oldest structural elements in south-central Vancouver Island. Folding and uplift occurred before the late Cretaceous, and possibly before the Mesozoic (Muller and Carson, 1969) and additional tilting, folding, and uplift occurred after the late Cretaceous. Sicker Group volcanic and sedimentary rocks occur at the cores of these uplifts.

Asymmetric southwest-verging, northwest-trending antiformal fold structures characterized by subvertical southwest limbs and moderately dipping northeast limbs are reported at Buttle Lake, in the Cameron-Nitinat River area, and north of Cowichan Lake. Well-developed foliation developed during metamorphism to chlorite-actinolite and chlorite-sericite schist in steep and overturned limbs of folds. Folding may have occurred prior to intrusion of Triassic(?) mafic sills along axial planar surfaces in folded 'Sediment-Sill Unit' (Cameron River Formation) rocks. Evidence from K-Ar dating also suggests Jurassic folding. Buttle Lake Formation limestones are relatively undeformed in some places, although in others, as in the Chemainus River Canyon, they are highly deformed, along with other Sicker Group rocks (Brandon and others, 1986). Vancouver Group units are not as intensely folded; gentle monoclinal and domal structures have been mapped. Karmutsen Formation volcanic rocks may locally conform to the attitude of underlying Myra and Buttle Lake Formations (Muller, 1980a), although significant unconformable relations have been mapped by MPH personnel in some areas in the Cowichan Uplift.

Some early Mesozoic faulting occurred in the area prior to emplacement of Island Intrusions. Middle to Upper Jurassic intrusive activity (Island Intrusions) occurred along north-westerly trends.

Extensive west-northwest trending faulting occurred during the Tertiary and is best illustrated by large displacements of Nanaimo Group sediments in some areas, such as the north side of the Chemainus River Valley, placing Sicker Group rocks above the Nanaimo Group rocks. These faults have been traced for up to 100 km. Such structures may represent large scale underthrusting from the southwest, in a regime of long-term semi-continual northeast-southwest compression. Nanaimo Group sediments are tilted up to at least 60° from paleohorizontal where they are overlying folded Sicker Group rocks with angular unconformity such as on the south side of the Chemainus River Valley. Minor late northeasterly trending tear-faults and block faults offset northwest-trending faults in the Cowichan Valley and Saltspring Island area.

5.0 1987 EXPLORATION PROGRAM

5.1 Work Completed

Fieldwork for the 1987 exploration program was conducted between December 12 and December 20, 1987. One geologist and one field assistant spent a total of three mandays on the property.

Geological mapping at a scale of 1:10,000 was conducted on most of the property (approximately 400 ha). Nine rock samples and five stream sediment samples were collected during the mapping program.

5.2 Geology of the Gold Tusk Property

From mapping conducted on the adjacent Myra claim it appears that the extreme southwest corner of the Gold Tusk claim is underlain by sedimentary rocks of the Upper Paleozoic Sicker Group; specifically, cherty siltstone and chert of the Cameron River Formation (Sediment-Sill Unit). These rocks have been intruded by quartz diorite of the Jurassic Island Intrusions (Figure 2).

Unconformably overlying the Paleozoic and Jurassic aged rocks are sedimentary rocks of the Upper Cretaceous Nanaimo Group. The stratigraphic position of these sedimentary rocks within the Nanaimo Group is uncertain, but they have been tentatively assigned to the Haslam, Extension-Protection and Cedar District Formations (Massey, personal communication). These sedimentary rocks strike to the northwest and dip moderately to the northeast.

The majority of the property appears to be underlain by shale of the Haslam Formation. Relief in the area south of the Chemainus River is low and bedrock exposure is rare. Where bedrock is exposed it is a friable, soft, grey shale. The upper part of the formation is well exposed along the flanks of the Chemainus River. The rocks are a consuming upwards turbiditic sequence of shale siltstone and sandstone. Ripple marks and sole marks in the sandstone horizons indicate that tops are up and that the sequence is younging to the northeast.

Overlying the Haslam Formation is an approximately 50-80 m thick horizon of pebble conglomerate of the Extension-Protection Formation. The rock is composed of a medium-grained brownish-grey sandstone matrix (30-40%) supporting generally subrounded and rounded pebbles predominantly composed of black to light greenish-grey cherty siltstone (probably derived from the underlying Cameron River Formation (Sediment-Sill Unit)). Pebbles of fine-grained granodiorite(?) and sandstone make up less than 5% of the rock. Pebble diameter ranges up to 2 cm and averages 0.5 cm.

Above the Extension-Protection Formation is a sequence of bedded shale of the Cedar District Formation. This rock is exposed in the north wall of an 80 m deep canyon on the Chemainus River. Rock from this formation was sampled and studied at only one location in a small quarry north of the canyon (Figure 2; samples 24157, 24158). It is a medium to dark brownish-grey, soft, friable, thinly laminated shale with minor amounts of siltstone. This rock has a distinctly brownish hue compared to the shale observed below the conglomerate. The brown colour, however, may be due to oxidation.

Shale in the quarry is covered by the Regal claims owned by (Shalex Resources Limited). The shale is apparently expandable and suitable for the manufacturing of lightweight aggregate.

5.3 Stream Sediment Geochemistry Survey

Five stream sediment samples were collected on the Gold Tusk claim. Samples consisted of dark brown to black organic material, silt, and fine to coarse-grained sand. Small amounts of sediment were collected from several locations along a few metres of stream bed in an attempt to get a representative sample.

Only sample S-1 contained anomalous concentrations of any metal (40 ppb Au). No outcrop was found in this area but it is apparently underlain by shale of the Haslam Formation.

5.4 Properties of Expandable Shale Discovered in the Gold Tusk Property Area

The Regal Claims (Figure 2) are apparently predominantly underlain by shale of the Cedar District Formation. Tests conducted by Shalex Resources Limited (Shalex Resources Ltd., 1986) of Victoria have shown that this material is expandable and suitable for the manufacturing of lightweight aggregate.

It was found that when crushed and heated to 1220°C (2228°F) the bulk density changed from approximately 750 kg/m^3 to 300 kg/m^3. The expanded material had a high strength-to-weight ratio, a uniform spherical shape and was not absorbent; all of which are required properties for lightweight aggregates.

6.0 CONCLUSIONS

Although no exposures of rocks of the Cameron River (Sediment-Sill Unit) Formation or Island Intrusions were found on the Gold Tusk property, they may underlie the southwest corner of the claim block. Rhodonite occurs in cherty sedimentary rocks of the Cameron River Formation (Sediment-Sill Unit) on the adjacent Myra claim and similar deposits may occur on the Gold Tusk claim.

The horizon of expandable shale covered by the Regal claims appears to extend onto the Gold Tusk property.

7.0 RECOMMENDATIONS

7.1 Recommended Phase I Work Plan

1. Some research should be conducted into the manufacturing cost and marketability of lightweight aggregate.

2. More detailed mapping should be conducted in the area north of the Chemainus River to define the limits of the Cedar District Formation.

3. Shale from both the Cedar District and Haslam Formations on the Gold Tusk property should be tested for expandability.

4. Open ground between the Ryan and Never Sweat claims should be staked to cover a possible extension of the expandable shale horizon.

5. Detailed mapping should be conducted in the southwest corner of the property to define the limits of the Cameron River Formation (Sediment-Sill Unit) and to prospect for occurrences of rhodonite.

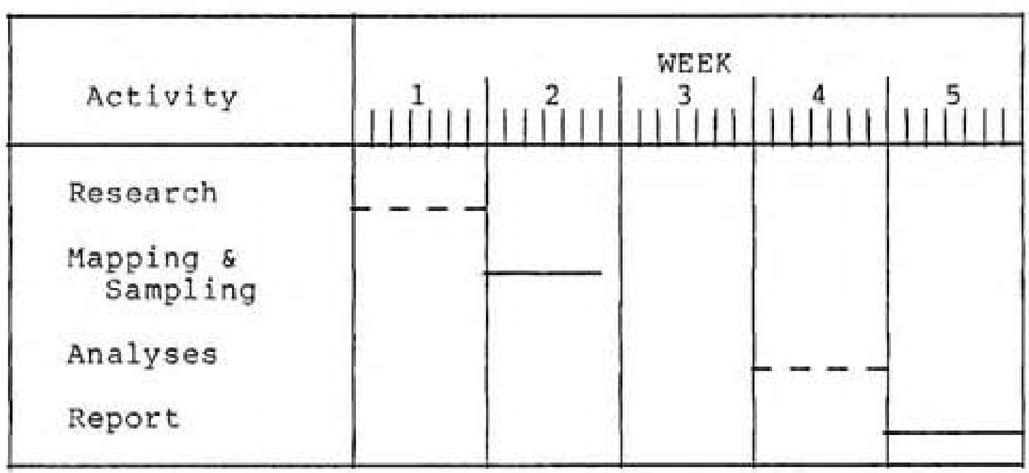
7.2 Proposed Phase I Budget

FIELDWORK

Personnel:			
Project Manager	10 days @ $425	$4,250	
Field Assistant	4 days @ $150	600	
			$ 4,850
Accommodation:			
14 mandays @ $55			770
Equipment Rental:			
4 x 4 Truck	10 days @ $110		1,100

Disbursements:				
Analyses:				
Rock	20 @ $14	$280		
Silt	10 @ $13.30	133		
Expansion Tests	20 @ $20	400		
			$ 813	
Courier, Freight, etc.			200	
Map blowups			100	
Copies of maps			150	
Exploration Supplies			100	
Transportation			100	
Miscellaneous			150	
	Disbursements subtotal		$1,613	
	Administration (15%)		242	
	Disbursements Total			$ 1,855
	Fieldwork Subtotal			8,575
	Contingency (15%)			1,286
Consulting				1,000
Report				4,000
		Total Project Cost		$14,861
		or approximately		$15,000

7.3 Proposed Phase I Work Schedule



7.4 Summary of Recommendations

A brief feasibility study of the manufacturing and marketing of expanded shale should be conducted. Shale on the Gold Tusk property should be tested for expandability. The southwest corner of the property should be mapped and prospected for occurrences of rhodonite. This program is estimated to cost approximately $15,000.

Respectfully submitted,
MPH CONSULTING LIMITED

Gordon J. Allen

Gordon J. Allen, P.Geol.

Duncan, B.C.
January 31, 1988

CERTIFICATE

I, Gordon J. Allen, do hereby certify:

1. I am a graduate in geology of the University of British Columbia (B.Sc. 1975).

2. I have practised as a geologist in mineral exploration for thirteen years.

3. I am a member in good standing of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

4. Opinions, conclusions and recommendations contained herein are based on fieldwork performed by myself and other MPH personnel between December 12 and December 20, 1987.

5. I own no direct, indirect, or contingent interests in the subject property, or shares or securities of International Cherokee Developments Limited.

Gordon J. Allen

Gordon J. Allen, P.Geol.

Duncan, B.C.
January 31, 1988

REFERENCES

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APPENDIX I

List of Personnel and Statement of Expenditures

LIST OF PERSONNEL AND STATEMENT OF EXPENDITURES

The following expenses have been incurred on the Gold Tusk property as defined in this report for the purposes of mineral exploration between the dates of December 12, 1987 and January 31, 1988.

Personnel:			
G.J. Allen, P.Geol., Project Manager			
4.5 days @ $425		$1,912.50	
B.Y. Thomae, B.Sc., Geologist			
1.5 days @ $350		525.00	
Office Assistant			
0.5 days @ $150		75.00	
D. Wardwell, Field Assistant			
0.5 days @ $150		75.00	
Total Personnel Cost			$2,587.50
Equipment Rental:			
4 x 4 Truck 2.5 days @ $90		225.00	
Rock Saw 1.5 days @ $15		22.50	
Total Equipment Cost			247.50
Support Costs:			
Room & Board 3 days @ $55			165.00
Disbursements:			
Analyses:			
9 Rock (Au, ICP) @ $14.00	$126.00		
5 Silt (Au, ICP) @ $13.30	66.50		
Total Analytical Cost		192.50	
Topographic Map Preparation		49.53	
Courier & Shipping		38.82	
Gas		46.35	
Report Preparation:			
Drafting	132.00		
Typing	253.00		
Map Reproduction	7.60		
Copying & Binding Report	46.90		
Total Report Cost		439.50	
Disbursements Subtotal		766.70	
Administration (15%)		115.00	
Total Disbursements Cost			881.70
Total Project Cost			$3,881.70

APPENDIX II

Rock Sample Descriptions and Selected Lithogeochemical Results

Sample Number	Description	Au ppb	Ag ppm	As ppm	Cu ppm
24151	Location: Copper Canyon main road, 20 m west of W Chemainus River bridge. Sample Type: Grab from large outcrop Rock Type: Shale, siltstone, sandstone Interbedded medium grey to dark grey, silty to sandy shale and fine-grained sandstone. Bedding orientation: 123/40 NE. The shale is soft and friable and occurs in beds from 2 to 20 cm thick. This material is probably part of the Haslam Formation.	5	0.2	15	51
24152	Location: Chipman Creek at Copper Canyon main road. Sample Type: Grab from large outcrop Rock Type: Shale Dark grey thinly laminated, fissile, soft, silty to sandy shale, shale and siltstone. This material is probably part of the Haslam Formation.	5	0.1	5	47
24153	Location: Chipman Creek at Copper Canyon main road. Sample Type: Grab from outcrop of 0.5 m thick bed Rock Type: Sandstone Massive, medium-grained sandstone with subangular blue-grey to greenish-grey cherty grains and black lithic grains. This sandstone occurs in beds up to 0.5 m thick, interlayered with silty to sandy shale (24152, 24154), and is probably part of the Haslam Formation.	5	0.1	7	16

Sample Number	Description	Au ppb	Ag ppm	As ppm	Cu ppm
24156	Location: 20 m west of W Chemainus River bridge, Copper Canyon main road. Sample Type: Grab from float near source of 50 m(+) thick unit Rock Type: Conglomerate This rock is similar to material sampled in 24155, and is also probably part of the Extension-Protection Formation. One rounded black cherty pebble 0.5 cm in diameter contains 40% fine-grained disseminated pyrite.	5	0.2	6	19
24157	Location: North of Chemainus River Gorge, 'Shalex Pit'. Sample Type: Grab from large outcrop Rock Type: Shale Medium to dark brownish-grey, soft, friable, thinly laminated shale grading into siltstone. This material overlies the conglomerate (24155, 24156) and is probably part of the Cedar District Formation. It has a distinctly brownish hue compared to the shale below the conglomerate.	5	0.1	6	59
24158	Location: North of Chemainus River Gorge, 'Shalex Pit'. Sample Type: Grab from large outcrop Rock Type: Shale Similar to 24157. This sample was taken approximately 3 m east along strike from 24157.	5	0.1	9	54

Sample Number	Description	Au ppb	Ag ppm	As ppm	Cu ppm
24159	Location: Road cut, south side of Chemainus River. Sample Type: Grab from outcrop Rock Type: Shale Friable, soft, dark grey shale.	5	0.1	16	57

APPENDIX III

Certificates of Analysis

ROSSBACHER LABORATORY LTD.

2225 S. SPRINGER AVENUE
BURNABY, B.C. V5B 3N1
TEL : (604) 299 - 6910

CERTIFICATE OF ANALYSIS

TO : MPH CONSULTING LTD.
#2406-555 W.HASTINGS ST. (BOX 12092)
VANCOUVER B.C.
PROJECT: V99-ICD GOLD TUSK
TYPE OF ANALYSIS: GEOCHEMICAL

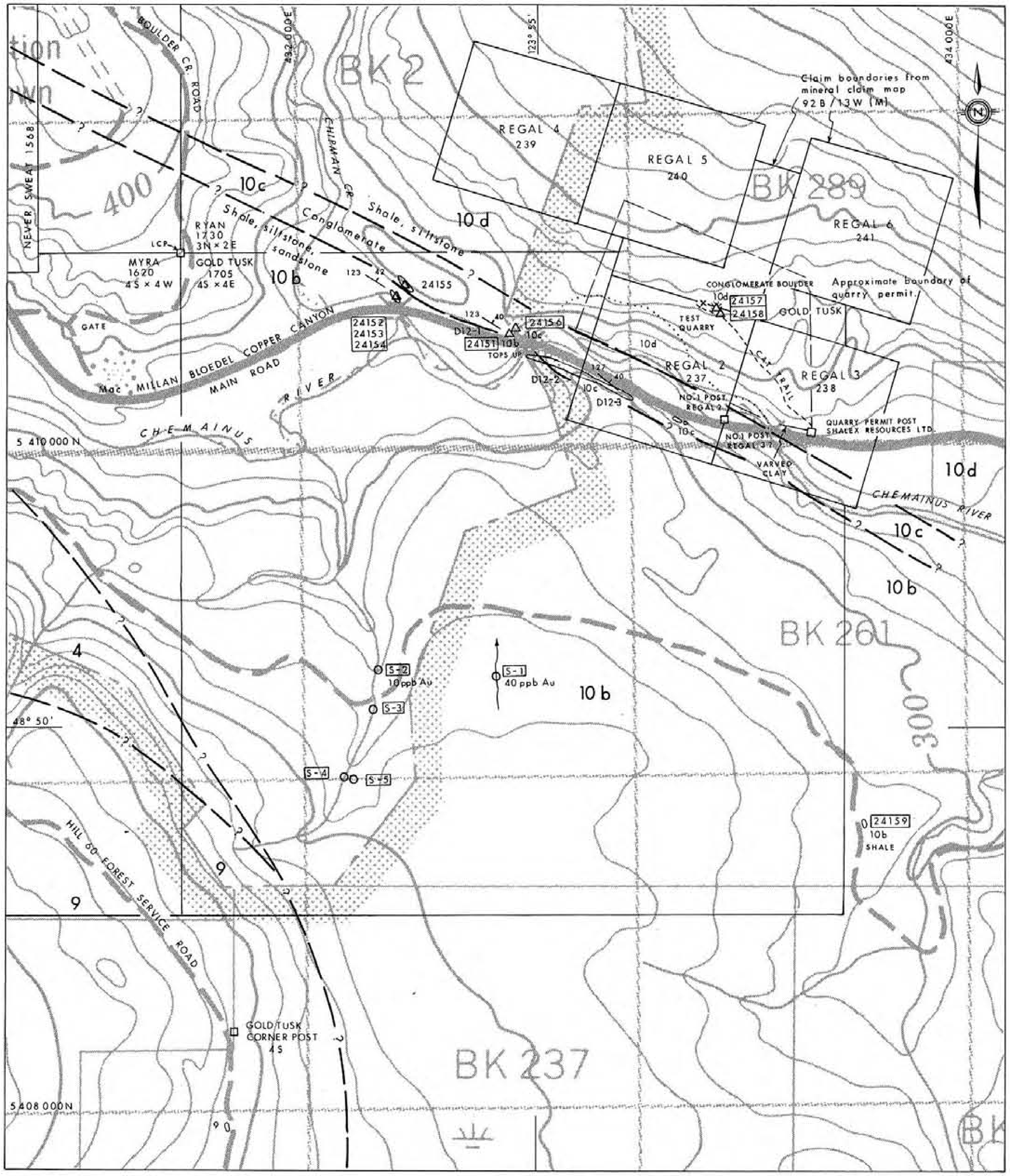
CERTIFICATE#: 87388.B
INVOICE#: 8037?
DATE ENTERED: 87-12-30
FILE NAME: MPH87388.B
PAGE # : 1

PRE FIX	SAMPLE NAME	PPB Au
A	24151	5
A	24152	5
A	24153	5
A	24154	5
A	24155	5
A	24156	5
A	24157	5
A	24158	5
A	24159	5
L	S1	40
L	S2	10
L	S3	5
L	S4	5
L	S5	5

CERTIFIED BY : ____________________

RECEIVED JAN 4 1988

SAMPLE#	MO PPM	CU PPM	PB PPM	ZN PPM	AG PPM	NI PPM	CO PPM	MN PPM	FE %	AS PPM	U PPM	AU PPM	TH PPM	SR PPM	CD PPM	SB PPM	BI PPM	V PPM	CA %	P %	LA PPM	CR PPM	MG %	BA PPM	TI %	B PPM	AL %	NA %	K %	W PPM
24151	1	51	4	97	.2	50	16	465	4.78	15	5	ND	2	14	1	2	2	58	.25	.053	5	50	1.32	56	.01	7	2.12	.02	.22	1
24152	1	47	10	128	.1	64	20	461	5.07	5	5	ND	3	32	1	2	2	62	.43	.045	3	56	1.48	90	.01	9	2.65	.02	.22	1
24153	1	16	2	70	.1	35	12	606	4.31	7	5	ND	3	15	1	3	3	52	.47	.029	5	64	1.08	98	.01	5	2.08	.02	.11	1
24154	1	49	11	141	.1	72	22	525	5.60	8	5	ND	4	72	1	2	2	71	.66	.042	4	64	1.64	133	.01	10	3.00	.02	.32	1
24155	1	15	2	36	.1	16	5	345	2.06	6	5	ND	1	7	1	2	2	32	.18	.026	4	111	.55	87	.07	6	.94	.02	.11	1
24156	1	19	4	38	.2	18	7	404	2.25	6	5	ND	2	16	1	2	2	33	.27	.028	5	90	.65	111	.03	5	1.04	.02	.11	1
24157	1	59	14	132	.1	82	19	456	5.78	6	5	ND	2	23	1	2	3	68	.24	.048	4	62	1.38	275	.01	6	3.18	.01	.24	1
24158	1	54	8	125	.1	72	17	570	5.90	9	5	ND	3	32	1	2	2	64	.45	.126	6	56	1.31	208	.01	7	2.93	.01	.18	1
24159	1	57	16	121	.1	66	19	670	5.32	16	5	ND	2	18	1	2	5	55	.34	.137	6	48	1.31	75	.01	2	2.69	.01	.11	1
S1	1	49	27	217	.5	84	25	2290	3.82	6	5	ND	2	91	1	2	2	70	1.24	.069	23	123	.94	270	.02	5	3.48	.03	.24	1
S2	1	29	9	73	.1	29	13	705	3.10	3	5	ND	2	46	1	2	4	58	.58	.037	20	117	.85	140	.06	7	2.77	.04	.14	1
S3	1	27	8	77	.1	29	15	966	3.20	6	5	ND	2	49	1	2	4	59	.74	.037	17	155	.82	149	.06	5	2.75	.05	.16	1
S4	1	27	9	72	.5	28	13	858	3.30	5	5	ND	4	50	1	3	2	60	.61	.029	17	206	.89	136	.06	6	2.61	.05	.17	1
S5	1	32	14	110	.1	29	20	2062	3.75	7	5	ND	2	47	1	2	2	68	.71	.043	12	169	.86	165	.07	5	2.65	.05	.16	1
STD C	19	60	39	133	7.4	69	31	1086	4.34	42	18	8	40	52	19	18	20	61	.48	.085	39	61	.91	181	.07	37	1.89	.06	.16	12



GEOLOGICAL LEGEND

MESOZOIC

CRETACEOUS

10 UPPER CRETACEOUS NANAIMO GROUP

- 10 d Cedar District Formation: shale, siltstone
- 10 c Extension-Protection Formation: conglomerate, minor sandstone
- 10 b Haslam Formation: shale, siltstone, minor sandstone

JURASSIC

9 LOWER TO MIDDLE JURASSIC ISLAND INTRUSIONS
quartz diorite, granodiorite

PALEOZOIC

SICKER GROUP

4 Cameron River Formation: siltstone, cherty siltstone, chert, sandstone, argillite, rhodonite.

— — —	Geological contact
42 / 123	Bedding
D12-1	Outcrop with field note reference
△ 24151	Rock sample from outcrop
S-1 ○ 40ppb Au	Stream sediment sample with anomalous metal content
⊡	Claim post
———	Claim line

Note: Claim line locations determined from posts located in field unless otherwise noted.

→ Stream indicating direction of flow.

0 200 400 600 800 1000 m

NTS 92B / 13 W

INTERNATIONAL CHEROKEE DEVELOPMENTS LIMITED

GEOLOGY
GOLD TUSK PROPERTY

VICTORIA MINING DIVISION B.C.

Project No:	V 99-ICD-G.T.	By:	G. A.
Scale:	1 : 10000	Drawn:	J. S.
Drawing No:	2	Date:	JANUARY 1988.

MPH Consulting Limited